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ABSTRACT

In fall 1987, a study was conducted at Lincoln Land Community College (LLCC) to examine the college's system of basic skills assessment for course placement. The study investigated the adequacy of established cut scores; placement evasion (i.e., the disregarding of a recommendation to take a developmental course) and its consequences; the use of reading scores to place students in social and behavioral science classes; and the comparative advantages and disadvantages of recommended and mandatory placement. Study findings included the following: (1) the analysis of cut score adequacy suggested that cut scores for both math and English should be raised modestly to reduce failure rates; (2) a high incidence of placement evasion was found in math, with a more moderate incidence in English; (3) students who ignored placement recommendations for developmental courses failed transfer courses much more frequently than students whose assessment scores indicated initial placement in a transfer course; (4) no relationship was found between reading scores and success in introductory sociology or history courses, but high reading scores were positively related to success in introductory psychology; and (5) evidence was found in support of mandatory placement, however, the failure rates in developmental courses suggested that a review of curricula accompany any move toward mandatory placement. (EJV)

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EVALUATION OF AN ASSESSMENT AND PLACEMENT SYSTEM FOR ENTRY-LEVEL COURSES

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July 1988

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EXECUTIVE SUMMARY

The college studied fall 1987, entering freshmen to examine its system of basic skills assessment for recommended placement into courses. Four focal issues of the study were cut score adequacy; placement evasion (the disregarding of a recommendation to take a developmental course) and its consequences; the use of reading scores for placement in social/behavioral science; and recommended versus mandatory placement. A secondary issue was the performance of students over 20. Analysis of these issues consisted of various statistical treatments plus a survey to gather faculty judgment of the placement of individual students.

Analysis of the first focal issue, cut score adequacy, suggested a modest raising of cut scores for both math and English in order to reduce failure rates in these courses (both transfer and developmental). However, this analysis assumes general compliance with placement recommendations. An alternative would be to expand the decision zones upward (under the same assumption).

Placement evasion was found to be high (61%) in math and moderate (16%) in English. Evaders, i.e., students with a developmental assessment score who took a transfer course anyway, failed transfer courses much more frequently than students whose assessment score indicated initial placement in a transfer course. However, the failure rates in developmental math and English were also high, suggesting a need to review these curricula (which at the time of the study had already begun).

The use of reading scores for placement in social/behavioral science was indicated in only one instance (Introduction to Psychology). No relationship was found between reading score and success in introductory sociology or history courses.

Much evidence supported consideration of mandatory placement: evasion rates, the consequences of evasion, the relationship between assessment score and course grades, faculty judgment, and the ability to more nearly control the effect of cut score changes. However, the failure rates in developmental courses suggest that a review of those curricula accompany any move toward mandatory placement.

Finally, students over 20 outperformed younger counterparts, underscoring the value of multiple indicators in placement decisions.

INTRODUCTION

Background

Basic skills assessment has become commonplace in community colleges in order to assist in placing entering students in appropriate courses. With the emergence of assessment and placement systems as an important element in student, faculty, and institutional success, it becomes essential for colleges to evaluate the effectiveness of such systems. Three levels at which evaluation could be conducted include the following:

1. Complete. A representative committee would engage in a self-study to review all of the components of the assessment and placement system, such as goals, instruments used for assessment, and procedures used in assessing and placing students. If there are major discrepancies between goals and the system, new procedures or instruments should be explored, implemented, and evaluated. If the system does not appear to need total revision, evaluation could move to level two.

2. Major feature. The committee decides to examine a major feature, or perhaps features, of the system for potential change, for example, shifting from recommended to mandatory placement. At this level, change would cut across the system. Evidence gathered might also lead to movement to level one.

3. Minor feature. Some aspect would be examined for potential revision, for, example, the instrument used to assess students for placement within a given discipline or a test's placement accuracy for returning students.

As of fall 1987 Lincoln Land Community College, a midwestern, public community college, had for three years used ACT's ASSET to assess students' entry-level skills in language usage, reading, and mathematics as the basis for recommended course placement. At that time the Assessment Committee of the college chose to review its assessment and placement system by focusing on four issues: 1) cut score adequacy; 2) placement evasion; and 3) placement in social/behavioral science based on reading skills; and 4) recommended versus mandatory placement.

Methodology

The college's fall 1987 headcount enrollment was about 7,600 credit students. Included in this study were all fall 1987 first-time freshmen with a complete set of ASSET scores, 691 students. Many of these students (283) had ACT scores as well.

To address the central issues of the study the following data were gathered:

1. ASSET scores and, when available, ACT scores.
2. Age.
3. Final grades from courses completed in fall 1987.
4. GPA.
5. From randomly selected classes, faculty judgments on the effectiveness of placement of individual students.

The data were analyzed using several statistical procedures.

1. Basic descriptive statistics such as means, standard deviations, and frequency distributions to check for any anomalies or problematic trends in the data.
2. Correlations to provide a general measure of the relationship between assessment scores and a criterion such as final grades.
3. Contingency analysis to display the relationship between groups of assessment scores and a criterion.
4. Crossbreaks analysis to reveal the consequences of using any given assessment score as a cut score.
5. Percentage of students accurately placed, as judged by faculty, to quantify expert opinion of the relationship between assessment score and the criterion of classroom performance.

The remainder of this report covers the results from the analysis of the data. The sequence of the report mirrors that of the data analysis, beginning with the most general descriptive statistics and proceeding to specific analysis of the major issues.

FINDINGS

Preliminary Analysis

Anomalies

A preliminary examination of the data indicated no particular anomalies. Descriptive measures such as means and standard deviations (Table 1) fell in line with other summary data the institution had collected, leading to confidence in further data analysis. Plots of scores and grades produced no extraordinary distributions.

Correlation

Correlations were derived both at a broad level, that is, the correlation between ASSET scores (and ACT scores where available) and GPA and at a narrower level, that is, the correlation between ASSET or ACT scores and the final grade in a specific course. In general, correlations in this study were found to be arguably modest (r values typically from .20 to .39) yet often statistically significant. This finding perhaps reflects the effect of placement (to suppress correlation) and large sample size (to increase the probability of significant r values).

Of the correlation between assessment scores and GPA, the following can be noted (Table 1):

1. A significant ($p < .001$) relationship existed between each ASSET score (language usage, reading, numerical skills) and GPA.

2. A significant ($p < .001$) relationship also existed between each ACT subscore and GPA, as well as between the ACT composite score and GPA.

As it happened, the ACT English subscore was the strongest correlate of GPA; among ASSET test scores, ASSET reading was. Generally the ACT scores were higher correlates of GPA than were ASSET scores. The higher ACT correlations are unsurprising given the different populations of test takers

involved. Those with ACT scores are, by and large, traditional students; those with ASSET scores include the returning student for whom testing is probably a less reliable predictor of GPA.

Of the correlation between assessment score and course grades, the following statistically significant correlations were noted (Tables 2,3):

1. ASSET numerical skills with Accounting 101 grade.

2. ASSET numerical skills score and ACT math score each with all math courses combined. ASSET numerical skills score was also a significant correlate of MAT 090 (developmental arithmetic), MAT 104 (math for the liberal arts student), and MAT 112 (introductory college algebra). ACT math score was also a significant correlate MAT 090 and MAT 112.

3. ASSET language skills and ACT English scores each with all communications courses combined. Each also correlated significantly with Communications 111 (freshman composition), but neither did so with Communications 099 (developmental composition). In fact, the correlate of ASSET language skills with developmental composition was negative, though not significant.

4. ASSET reading skills score with PSY 101 (Introduction to Psychology) and all courses combined but with neither SOC 101 (Introduction to Sociology) nor any history course.

Further Analysis

One of the principal questions regarding assessment and placement systems is, "How well does the assessment instrument sort students into appropriate courses?" At the heart of this question are the cut scores used to determine placement. This study examined the adequacy of existing cut scores through three analyses: 1) contingency analysis to display the relationship between ranges of ASSET scores and final grades; 2) crossbreaks analysis to measure placement effect of alternative cut scores; and 3) faculty judgment of placement.

Contingency Analysis

Although contingency analysis produces no exact evaluation of individual cut scores, it can be quite useful in judging trends in scores and student performance. Those scoring high on assessment measures should perform better on the criterion. Contingency analysis may also be used to reveal the rate and consequences of student evasion of placement recommendations (Table 4).

For this analysis ASSET scores were broken into ranges which not only approximated current cut scores but also enabled sufficient membership in each range. The subject areas examined were composition, mathematics, and social/behavioral science (using psychology). Social/behavioral science was included to gauge the importance of reading ability to success in a course with substantial required reading. The criterion in each was final grade, while the assessment score was ASSET language skills, numerical skills, or reading skills.

Contingency analysis revealed several observations common to both composition and mathematics. First, as assessment score ranges increased, so did final grades and percentage of students passing. Second, with respect to success in a transfer course, students who evaded a recommendation to enter a developmental class fared worse than students who had unrestricted course selection. Third, students over 20 outperformed students under 20 in terms of grades earned and percentage of students passing.

Regarding composition and mathematics separately, placement recommendations were disregarded by 16% of composition students and approximately 61% of math students. (This approximation results from one score range containing both developmental and decision zone scores.) Students who evaded a placement recommendation failed (received D or F) at the rate of 26% in composition and 53% in math, while students with unrestricted course selection failed at the rate of 16% and 19% respectively. Students who complied with a recommendation to take a developmental course failed 35% of the time in composition and 52% of the time in math.

Regarding reading as an assessment measure, reading scores were related to success in Introduction to Psychology. As reading scores increased, so did final grades and percentage of students passing. Students with a developmental reading

score (11-20) failed at the rate of 39%; those with a score in or near the decision zone (21-30) at the rate of 36%; and those with high reading scores (31-40) at the rate of 11%. Also, students with a developmental assessment score in both reading and language skills evaded placement into developmental composition 25% of the time and failed 36% of the time. As the reading score increased (even though the language skills score remained developmental), so did the chances of success in transfer composition. If the reading score was in or near the decision zone, the failure rate dropped to 23%; if the reading score was high, the failure rate dropped to 9%.

Crossbreaks Analysis

Crossbreaks analysis is similar to contingency analysis except assessment test scores are not grouped into ranges but selected individually. The consequences of using any assessment score as a cut score are then displayed. Based on a given cut score, students are sorted into four categories:

a) students predicted to pass who fail - receive D or F (false positives);
b) students predicted to pass who pass (true positives);
c) students predicted to fail who fail (true negatives); and
d) students predicted to fail who pass (false negatives).

The magnitude of each error type that is tolerable is a matter of individual or institutional judgment, and is often a matter of trading one type of error for another. False positive error is often regarded as potentially serious, for students who are predicted to succeed but fail cast doubts on the instrument or mechanism which predicted their success. It is the error of unpleasant surprise, whereas false negative error may be considered pleasant surprise and therefore more acceptable to both student and institution. Accordingly, for the purposes of the subsequent analysis, it was assumed that the college desired a false positive error potential of 10% or less and true placements of 60% to 70%.

Composition

The first crossbreaks analysis (Table 5) dealt with possible cut scores on the ASSET language skills test for placement in COM 111 (freshman composition). Cut score here was defined as that score below which a student is counseled into a developmental course. Assuming total student compliance with the current cut score of 45, a maximum of 13% false positive error could occur. To reduce the false positive potential to 10% or less yet have 60-70% correct placements, the cut score would need to be raised to 48. However, a corresponding increase in false negative error would occur, from 10% to 21%.

Mathematics

A second crossbreaks analysis (Table 6) involved possible cut scores on the ASSET numerical skills test for placement in transfer math courses. Assuming total student compliance with the current cut score of 21, a maximum of 18% false positive error could occur. To reduce this potential to 10% or less yet have 60-70% correct placements, the cut score would need to be raised to 25. Correspondingly, false negative error would rise from 16% to 29%.

Faculty Judgment

Faculty judgment of placement was derived from a survey of on-campus faculty at 12 weeks into the 16 week semester. Faculty were selected via a stratified random sample in the following manner. All courses into which students are placed based on ASSET plus certain courses requiring extensive reading were listed. From this list sections were chosen at random assuring that, to prevent possible skewed data, no faculty member was selected more than once. Participating faculty were then sent a class roster and asked to indicate on the basis of student ability whether each student was placed correctly; too high, that is, the student should be in a lower level or developmental course; or too low. It should be noted that, coming from class rosters, this population of 909 students would contain not only those who had taken ASSET, but also students exempt from ASSET (about 20% of this group).

Faculty judgments can be summarized as follows (Table 7):

1. Math faculty judged 66% of their students to be placed correctly, 30% too high, and 4% too low.

2. Communications/composition instructors judged 82% of their students to be placed correctly, 16% too high, and 2% too low.

3. History, psychology, and sociology instructors collectively judged 85% of their students to be placed correctly, 14% too high, 1% too low.

DISCUSSION

This study began by noting four specific areas of focus: cut score adequacy, placement evasion, placement in social/behavioral science based on reading skills, and recommended versus mandatory placement. The concluding discussion shall entail not only analysis of these specific issues, but also remarks on other general issues that surfaced during the study.

General Issues

As a general observation both ASSET and ACT scores provide a barometer of subsequent performance. The correlation analysis validates the relationships anticipated between assessment test scores and either GPA or final grade in a course. Contingency analysis corroborates the positive relationship between assessment scores and course grades. The fact that neither the ASSET language skills test score nor the ACT English subscore correlated significantly with developmental composition may be a function of placement in that relatively homogeneous students, in terms of ability, are grouped into developmental classes. Also, the ASSET reading score had some influence on success in transfer composition, a fact which might be considered placement decisions.

Another general observation is that, given roughly equal assessment scores, the student over 20 outperformed younger students, suggesting that age (and the probable motivation

which accompanies it) be considered in placement decisions, particularly when an assessment score is in or near a decision zone.

A final general observation is that some failure rates, even when the placement recommendation is followed, appear excessive. This is noticeably true in developmental composition and developmental math, where failure rates were 35% and 52% respectively. These data suggest a probable need for curriculum revision (which the mathematics department had already undertaken at the time of this study) or additional skill diagnosis, such as a writing sample for composition.

Specific Issues

The first specific issue of the study, cut score adequacy, is best addressed by the findings from crossbreaks analysis and faculty judgment. Crossbreaks analysis indicates that should the college adopt the philosophy of desiring no more than 10% false positive error and 60% to 70% correct placements, it would need to raise cut scores somewhat, in both composition and math. These figures apply, of course, only under the assumption of mandatory placement. Faculty judgment supports the indication of raising cut scores. Placements judged as too high are essentially expert appraisal of false positive error. Composition faculty judged 16% of placements to be too high, math faculty 30%. Such a situation not only is counterproductive for the student, but also pressures instructors to compensate for underprepared students by teaching work that should already have been mastered and inflating grades. Thus, respecting cut score adequacy a modest raising (3-4 points) of cut scores appears reasonable. An alternative would be to expand decision zones upward.

The second specific issue, placement evasion, is best examined through the results of contingency analysis, which suggest that while an evasion rate of 16% in composition may be judged moderate, the rate of 61% in math is certainly high. However, while evasion may produce subtle pressures on instructors to re-teach earlier work and inflate grades, it is also quite meaningful in its consequences to the student. That is, if an assessment instrument is valid and well-matched to the curriculum, then those who evade placement recommendations should fare worse than those who follow them. If we compare students who evaded a

recommendation to take a developmental course to students who were free to take a transfer course, contingency analysis demonstrates that evaders were at greater risk of failure. If, on the other hand, we compare students who evaded a recommendation to take a developmental course to students who complied with such a recommendation, we find that evaders fared no worse (indeed better in composition). Perhaps more than anything else this second comparison points to a need for developmental curriculum review, especially since an earlier institutional study found that, on the average, students completing a developmental course and then a transfer course earned a transfer course grade no higher than students evading placement (Jacobson, 1988). These data also suggest that the characteristics (motivation, confidence) of evaders and non-evaders may be quite distinct.

The third specific issue, placement into social/behavioral science courses based on reading assessment yielded mixed results. Data suggest that a reading score could be used for placement into psychology but not into other social/behavioral science courses. This evidence may indicate an investigation of the degree to which introductory courses in the social/behavioral science curriculum demand reading skills.

The final specific issue, recommended versus mandatory placement, is problematic. Several elements of this study support consideration of mandatory placement. The first is the finding from contingency analysis that as assessment score increased, so invariably did mean final grade in whatever course a student completed. The second is evasion, both its rates and consequences. The rate in mathematics is extremely high. Moreover, both mathematics and composition students who evaded a placement recommendation fared worse than students who scored above the developmental range. The third element is faculty judgment, which would suggest more restrictive placement in order to reduce false positive error. Another is that under mandatory placement the college could more precisely track the rates of false positive and false negative error and thereby more nearly control each. While none to these elements individually may be dramatic enough to commend mandatory placement, in concert they could be.

One palpable element arguing against mandatory placement is the alarming failure rates of students who complied with a recommendation to enter a developmental course. Until the probable reasons for these rates are addressed, forcing a

student into a developmental course, at least as the developmental curriculum stood at the time of this study, may prove academically counterproductive.

In conclusion, this study indicates two future steps. First, the authors will again meet with the college's assessment committee to review the findings of the study. The committee will then determine whether to modify the system. Second, this study might be repeated to examine the effects of the curriculum revision in mathematics; to include W, WP, and WF grades; and to factor out the effects of special learning assistance (tutoring, study skills training, and the like). The curriculum revision in math should reduce failure rates. Including W, WP, and WF grades would be most useful if the reasons for dropping were known, but the very magnitude of these grades among subpopulations in the study might be revealing. Special learning assistance, in theory, should deflate correlations, and an examination of students utilizing these services could provide a measure of their effectiveness.

Jacobson, P.O. (1988). A study of the utility of ASSET in identifying students for placement in developmental courses. Unpublished report. Lincoln Land Community College, January 27, 1988.

FOCAL ISSUES

1. CUT SCORE ADEQUACY
2. PLACEMENT EVASION AND CONSEQUENCES
3. PLACEMENT INTO SOCIAL/BEHAVIORAL SCIENCE BASED ON READING SKILLS
4. RECOMMENDED VERSUS MANDATORY PLACEMENT

DATA ANALYZED

1. ASSET SCORES AND, WHEN AVAILABLE, ACT SCORES.
2. AGE.
3. FINAL GRADES.
4. GPA.
5. FACULTY JUDGMENT.

STATISTICAL PROCEDURES USED

1. SNOOPING MEASURES: MEAN, STANDARD DEVIATION, DISTRIBUTION
2. GENERAL RELATIONSHIP MEASURE: CORRELATION
3. SCORE TREND MEASURE: CONTINGENCY ANALYSIS
4. WHAT IF MEASURE: CROSSBREAKS ANALYSIS
5. EXPERT OPINION MEASURE: FACULTY JUDGMENT

SUMMARY OF CONCLUSIONS

1. THE PERFORMANCE OF STUDENTS OVER 20 AND THE INFLUENCE OF READING SKILLS SCORES ON PERFORMANCE IN COMPOSITION MIGHT BE ADDITIONAL FACTORS CONSIDERED IN PLACEMENT RECOMMENDATIONS.

2. A SLIGHT RAISING OF CUT SCORES OR AN UPWARD EXPANSION OF DECISION ZONES SEEMS REASONABLE.

3. THE USE OF READING SKILLS SCORES FOR PLACEMENT IN SOCIAL/BEHAVIORAL SCIENCE WARRANTS FURTHER STUDY.

4. WHILE MUCH EVIDENCE SUPPORTS CONSIDERATION OF MANDATORY PLACEMENT, TO ENACT THIS CHANGE WITHOUT ALSO ADDRESSING THE FAILURE RATES IN DEVELOPMENTAL COURSES WOULD BE QUESTIONABLE.

APPENDIX OF TABLES

Table 1	Preliminary Analysis: Means, Standard Deviations, Intercorrelations, and Correlations with GPA
Table 2	Correlation Between ASSET Scores and Course Grades
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Table 4	Placement Recommendation Evasion Rates and Consequences
Table 5	Crossbreaks for Composition
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Table 10	Contingency Analysis, Developmental Math
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Table 16	Contingency Analysis, Transfer Composition Based on Reading and Language Skills Score
Table 17	Contingency Analysis, Introduction to Psychology Based on Reading Skills Score
Table 18	Cut Scores

TABLE 1: PRELIMINARY ANALYSIS: MEANS, STANDARD DEVIATIONS, INTERCORRELATIONS, AND CORRELATIONS WITH GPA

Variable	Cases	Mean	Std Dev
ASLANG	691	45.9320	7.8541
ASREAD	691	26.3227	7.2705
ASNUM	691	18.6252	6.1132
ACTENG	286	16.2343	4.1841
ACTMAT	286	12.4301	6.3307
ACTSCI	286	14.5175	5.6193
ACTNAT	286	18.6014	4.9907
ACTCOMP	288	15.7708	4.8679
GPA	691	2.0319	1.1622
GRDNUM	669	3.1166	1.3057

Correlations:	ASLANG	ASREAD	ASNUM	ACTENG	ACTMAT	ACTSCI	ACTNAT	ACTCOMP	GPA
ASLANG	1.0000	.5113**	.4091**	.5341**	.3018**	.2748**	.1954**	.3155**	.1903**
ASREAD	.5113**	1.0000	.4816**	.5022**	.4165**	.5555**	.4413**	.4659**	.2397**
ASNUM	.4091**	.4816**	1.0000	.3675**	.6547**	.3319**	.3857**	.4508**	.2170**
ACTENG	.5341**	.5022**	.3675**	1.0000	.4480**	.5169**	.4163**	.7475**	.3413**
ACTMAT	.3018**	.4165**	.6547**	.4480**	1.0000	.3413**	.4008**	.7523**	.2619**
ACTSCI	.2748**	.5555**	.3319**	.5169**	.3413**	1.0000	.5269**	.7758**	.2620**
ACTNAT	.1954**	.4413**	.3857**	.4163**	.4008**	.5269**	1.0000	.7587**	.2527**
ACTCOMP	.3155**	.4659**	.4508**	.7475**	.7523**	.7758**	.7587**	1.0000	.2322**
GPA	.1903**	.2397**	.2170**	.3413**	.2619**	.2620**	.2527**	.2322**	1.0000

Minimum pairwise N of cases: 283 1-tailed Signif: * - .01 ** - .001

" . " is printed if a coefficient cannot be computed

TABLE 2: CORRELATION BETWEEN ASSET SCORES AND COURSE GRADES

	Course												
ASSET Test	COM 099	COM 111	Any COM	MAT 090	MAT 099	MAT 104	MAT 112	Any MAT	ACC 101	Any HIS	PSY 101	SOC 101	Any Course
Language Skills	-.10	.23**	.14*										
Numerical Skills				.40**	.32	.47*	.35*	.28**	.32*				
Reading Skills										.09	.33**	.21	.19**

*P < .01

**P < .001

N = 69

TABLE 3: CORRELATION BETWEEN ACT SCORES AND COURSE GRADES

	Course												
ACT Test	COM 099	COM 111	Any COM	MAT 090	MAT 099	MAT 104	MAT 112	Any MAT	ACC 101	Any HIS	PSY 101	SOC 101	Any Course
English	.23	.32**	.32**										
Math				.52*	.22	.46	.53**	.28*	.23				
Social Science										.15	.38**	.33	.16*

*P < .01

**P < .001

N = 283

TABLE 4: PLACEMENT RECOMMENDATION EVASION RATES AND CONSEQUENCES

Developmental Score Area	Evasion* Rate	Evader Failure Rate	Non-Evader Failure Rate, Developmental*	Non-Evader Failure Rate, Transfer*
ASSET Language Skills N = 275	16%	26%	35%	16%
ASSET Numerical Skills N = 94	61%	53%	52%	19%

*1. Evasion = scoring in the developmental range yet completing a transfer course
2. Non-Evader, Developmental = a student who scores in the developmental range and completes a developmental course
3. Non-Evader, Transfer = a student who scores above the cut score and completes a transfer course

TABLE 5: CROSSBREAKS FOR COMPOSITION

Conditions = COURNUM='111' N = 287

Measure = ASLANG and Criterion = GRDNUM

	Cutscore	Too High*		Correct*		Too Low*		Below Cut	On & Above
Developmental	44	42	15%	215	78%	20	7%	26	251
	45	38	14%	210	76%	29	10%	39	238
Decision Zone	46	37	13%	206	74%	34	13%	45	232
	47	32	12%	200	72%	45	16%	61	216
	48	28	10%	190	69%	59	21%	79	198
	49	24	9%	181	65%	72	26%	96	181

*Too high = predicted to pass but failed

*Correct = predicted to pass and passed or to fail and failed

*Too low = predicted to fail but passed

TABLE 6: CROSSBREAKS FOR MATH

Conditions = COURNUM > 103 N = 94

Measure = ASNUM and Criterion = GRDNUM

	Cutscore	Too High		Correct		Too Low		Below Cut	On & Above Cut
Developmental	18	28	30%	58	62%	8	8%	17	77
	19	25	26%	60	64%	9	10%	21	73
	20	24	26%	59	63%	11	11%	24	70
	21	20	21%	59	63%	15	16%	32	62
Decision Zone	22	17	18%	60	64%	17	18%	37	57
	23	13	14%	61	65%	20	21%	44	50
	24	10	11%	59	63%	25	26%	52	42
	25	7	7%	60	64%	27	29%	57	37
	26	6	6%	54	57%	34	36%	65	29
	27	3	3%	53	56%	38	40%	72	22
	28	1	1%	51	54%	42	45%	78	16
	29	1	1%	42	45%	51	54%	87	7

TABLE 7: FACULTY JUDGMENT OF PLACEMENT

	Sections	Enrollment	Student Placement		
			Too High	Too Low	Correct
Composition/ Communications	9	194	31(16%)	4(2%)	159(82%)
Math/Technical Math	19	534	161(30%)	21(4%)	352(66%)
History/Psychology/ Sociology	6	181	25(14%)	2(1%)	154(85%)
ALL	34	909	217(24%)	27(3%)	665(73%)

TABLE 8: CONTINGENCY ANALYSIS, ALL MATH COURSES

CUTSCORE DATA FOR MAT BY PERCENTAGES

Conditions =

Measure = ASNUM and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
9 - 16	Number	9	8	8	9	27	61	61	25 / 36	
	Percentages	15	13	13	15	44	61	61	41 / 59	1.39
17 - 24	Number	13	11	21	15	25	85	146	45 / 40	
	Percentages	15	13	25	18	29	85	146	53 / 47	1.87
25 - 32	Number	11	11	14	2	6	44	190	36 / 8	
	Percentages	25	25	32	5	14	44	190	82 / 18	2.43
Numbers for Each Grade		33	30	43	26	58	190	190	106 / 84	
	Percentages	17	16	23	14	31	190	190	56 / 44	1.76

N = 190

Mean of Scores = 19.44

Range of Scores = 33 - 0

TABLE 9: CONTINGENCY ANALYSIS, MATH STUDENTS OVER 20

CUTSCORE DATA FOR MAT BY PERCENTAGES

Conditions = AGE > 20

Measure = ASNUM and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
9 - 16	Number	5	3	1	2	7	18	18	9 / 9	
	Percentages	28	17	6	11	39	18	18	50 / 50	1.83
17 - 24	Number	6	1	5	2	1	15	33	12 / 3	
	Percentages	40	7	33	13	7	15	33	80 / 20	2.80
25 - 32	Number	5	3	1	0	2	11	44	9 / 2	
	Percentages	45	27	9	0	18	11	44	82 / 18	2.82
Numbers for Each Grade		16	7	7	4	10	44	44	30 / 14	
	Percentages	36	16	16	9	23	44	44	68 / 32	2.34

N = 44

Mean of Scores = 19.05

Range of Scores = 33 - 0

TABLE 10: CONTINGENCY ANALYSIS, DEVELOPMENTAL MATH

CUTSCORE DATA FOR MAT BY PERCENTAGES

Conditions = COURNUM < '104'

Measure = ASNUM and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
9 - 16	Number	9	7	4	5	22	47	47	20 / 27	
	Percentages	19	15	9	11	47	47	47	43 / 57	1.49
17 - 24	Number	9	5	9	4	15	42	89	23 / 19	
	Percentages	21	12	21	10	36	42	89	55 / 45	1.74
25 - 32	Number	3	3	0	0	1	7	96	6 / 1	
	Percentages	43	43	0	0	14	7	96	86 / 14	3.00
Numbers for Each Grade		21	15	13	9	38	96	96	49 / 47	
	Percentages	22	16	14	9	40	96	96	51 / 49	1.71

N = 96

Mean of Scores = 16.67

Range of Scores = 33 - 0

TABLE 11: CONTINGENCY ANALYSIS, TRANSFER MATH

CUTSCORE DATA FOR MAT BY PERCENTAGES

Conditions = COURNUM>'104'.or.COURNUM='104'

Measure = ASNUM and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
9 - 16	Number	0	1	4	4	5	14	14	5 / 9	
	Percentages	0	7	29	29	36	14	14	36 / 64	1.07
17 - 24	Number	4	6	12	11	10	43	57	22 / 21	
	Percentages	9	14	28	26	23	43	57	51 / 49	1.60
25 - 32	Number	8	8	14	2	5	37	94	30 / 7	
	Percentages	22	22	38	5	14	37	94	81 / 19	2.32
Numbers for Each Grade		12	15	30	17	20	94	94	57 / 37	
	Percentages	13	16	32	18	21	94	94	61 / 39	1.81

N = 94

Mean of Scores = 22.28

Range of Scores = 33 - 0

TABLE 12: CONTINGENCY ANALYSIS, ALL COMPOSITION COURSES

CUTSCORE DATA FOR COM BY PERCENTAGES

Conditions =

Measure = ASLANG and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
35 - 44	Number	10	35	53	18	20	138	136	98 / 38	
	Percentages	7	26	38	13	15	138	136	72 / 28	1.98
45 - 54	Number	27	65	99	21	30	242	378	191 / 51	
	Percentages	11	27	41	9	12	242	378	70 / 21	2.16
55 - 64	Number	12	21	15	2	1	51	429	48 / 3	
	Percentages	24	41	29	4	2	51	429	94 / 6	2.80

N = 429

Mean of Scores = ******

TABLE 13: CONTINGENCY ANALYSIS, DEVELOPMENTAL COMPOSITION

CUTSCORE DATA FOR COH BY PERCENTAGES

Conditions = COURNUM<'104'

Measure = ASLANG and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
36 - 40	Number	1	6	7	8	6	28	28	14 / 14	
	Percentages	4	21	25	29	21	28	28	50 / 50	1.57
41 - 45	Number	2	15	18	5	7	47	75	35 / 12	
	Percentages	4	32	38	11	15	47	75	74 / 28	2.00
46 - 50	Number	0	1	2	0	1	4	79	3 / 1	
	Percentages	0	25	50	0	25	4	79	75 / 25	1.75
51 - 55	Number	0	0	0	1	0	1	80	0 / 1	
	Percentages	0	0	0	100	0	1	80	0 /100	1.00
56 - 60	Number	0	0	1	0	0	1	81	1 / 0	
	Percentages	0	0	100	0	0	1	81	100 / 0	2.00

N = 81

Mean of Scores = ******

Range of Scores = 61 - 0

TABLE 14: CONTINGENCY ANALYSIS, TRANSFER COMPOSITION

CUTSCORE DATA FOR COM BY PERCENTAGES

Conditions = COURNUM = '111'

Measure = ASLANG and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
36 - 40	Number	0	0	5	2	1	8	8	5 / 3	
	Percentages	0	0	63	25	13	8	8	63 / 38	1.50
41 - 45	Number	2	5	20	5	3	35	43	27 / 8	
	Percentages	6	14	57	14	9	35	43	77 / 23	1.94
46 - 50	Number	5	25	51	10	11	102	145	81 / 21	
	Percentages	5	25	50	10	11	102	145	79 / 21	2.03
51 - 55	Number	16	31	37	6	7	97	242	84 / 13	
	Percentages	16	32	38	6	7	97	242	87 / 13	2.44
56 - 60	Number	7	13	9	2	1	32	274	29 / 3	
	Percentages	22	41	28	6	3	32	274	91 / 9	2.72
61 - 65	Number	0	0	1	0	0	1	275	1 / 0	
	Percentages	0	0	100	0	0	1	275	100 / 0	2.00

N = 275

Mean of Scores = ******

TABLE 15: CONTINGENCY ANALYSIS, COMPOSITION STUDENTS OVER 20

CUTSCORE DATA FOR COM BY PERCENTAGES

Conditions = COURNUM = '111' .AND. AGE > 20

Measure = ASLANG and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
36 - 40	Number	0	0	0	0	0	0	0	0 / 0	
	Percentages	***	***	***	***	***	0	0	*** /***	*****
41 - 45	Number	0	2	1	0	0	3	3	3 / 0	
	Percentages	0	67	33	0	0	3	3	100 / 0	2.67
46 - 50	Number	3	5	7	0	2	17	20	15 / 2	
	Percentages	18	29	41	0	12	17	20	88 / 12	2.41
51 - 55	Number	10	1	2	0	1	14	34	13 / 1	
	Percentages	71	7	14	0	7	14	34	93 / 7	3.36
56 - 60	Number	3	2	0	0	0	5	39	5 / 0	
	Percentages	60	40	0	0	0	5	39	100 / 0	3.60
61 - 65	Number	0	0	0	0	0	0	39	0 / 0	
	Percentages	***	***	***	***	***	0	39	*** /***	*****

N = 39

Mean of Scores = ******

Range of Scores = 66 - 0

TABLE 16: CONTINGENCY ANALYSIS, TRANSFER COMPOSITION BASED ON READING AND LANGUAGE SKILLS SCORE

CUTSCORE DATA FOR COM BY PERCENTAGES

Conditions = COURNUM = '111'.AND. ASLANG < 46

Measure = ASREAD and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
11 - 20	Number	0	1	6	3	1	11	11	7 / 4	
	Percentages	0	9	55	27	9	11	11	64 / 36	1.64
21 - 30	Number	0	4	13	2	3	22	33	17 / 5	
	Percentages	0	18	59	9	14	22	33	77 / 23	1.82
31 - 40	Number	2	1	7	1	0	11	44	10 / 1	
	Percentages	18	9	64	9	0	11	44	91 / 9	2.36
Numbers for Each Grade		2	6	26	6	4	44	44	34 / 10	
	Percentages	5	14	59	14	9	44	44	77 / 23	1.91

N = 44

Mean of Scores = 24.57

Range of Scores = 41 - 0

TABLE 17: CONTINGENCY ANALYSIS, INTRODUCTION TO PSYCHOLOGY BASED ON READING SKILLS SCORE

CUTSCORE DATA FOR PSY101 BY PERCENTAGES

Conditions = GRDNUM < 7 .AND. GRDNUM > 0

Measure = ASREAD and Criterion = GRDNUM

RANGE		A	B	C	D	F	TOTAL	COUNT	PASS/FAIL	AVERAGE GRADE
11 - 20	Number	0	3	8	3	4	18	18	11 / 7	
	Percentages	0	17	44	17	22	18	18	61 / 39	1.56
21 - 30	Number	4	14	21	9	13	61	79	39 / 22	
	Percentages	7	23	34	15	21	61	79	64 / 36	1.79
31 - 40	Number	12	16	22	2	4	56	135	50 / 6	
	Percentages	21	29	39	4	7	56	135	89 / 11	2.54
Numbers for Each Grade		16	33	51	14	21	135	135	100 / 35	
	Percentages	12	24	38	10	16	135	135	74 / 26	2.07

N = 135

Mean of Scores = 28.31

Range of Scores = 41 - 0

TABLE 18: CUT SCORES

Language Usage	0 - 45	Com 098, Com 099
	46 - 47	Decision Zone
	48 - 64	Com 104 or Com 111
Reading Skills	0 - 24	Rdg 099
	25 - 26	Decision Zone
	27 - 40	OK
Numerical Skills	1 - 11	Math 081
	12 - 13	Decision Zone
	14 - 21	Math 082 or Bus 105
	22 - 23	Decision Zone
	24 - 32	Math 091, Math 104, etc.

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